FirstEnergy®

Davis-Besse Nuclear Power Station

IMC 0350 Meeting

Desired Outcomes

- Provide results of the Normal Operating Pressure (NOP) Test
  - People, Plant, and Processes
- Demonstrate that we have identified and addressed plant material and people issues requiring attention for restart
- Communicate remaining actions for restart

Lew Myers
Chief Operating Officer - FENOC

Meeting Agenda

- Outage Accomplishments……..……Lew Myers
- NOP Test Challenges
  - –Equipment……Greg Dunn
  - –Operational ……..……..……Mike Roder
- Assessment of Organizational Processes……Rick Dame
- Oversight Perspective.....……Steve Loehlein
- Results/Lessons-Learned from NOP Test……..Mark Bezilla
- Remaining Actions for Restart……Mike Ross
- Overall Conclusions……..……..……..Lew Myers

Lew Myers
Chief Operating Officer - FENOC

Personnel Changes

- Joe Hagan is the new FENOC Senior Vice-President overseeing Engineering and Support Services and reports to Gary Leidich, President and Chief Nuclear Officer - FENOC
  - Former senior Vice President of Nuclear Operations (Exelon Generation)
  - Bachelor of Science degree in Electrical Engineering
  - Master of Science Degree in Engineering Management
  - Licensed BWR Senior Reactor Operator at Hope Creek
  - Twenty-six years nuclear power experience

Lew Myers
Chief Operating Officer - FENOC

Personnel Changes

- Barry Allen is the new Plant Manager for Davis-Besse and reports to Mark Bezilla, Vice-President
  - Bachelor's degree in architecture structure
  - Master's degree in Civil Engineering
  - Senior Reactor Operator Certification at ANO-2
  - Seventeen years nuclear power experience

Lew Myers
Chief Operating Officer - FENOC

Outage Accomplishments

Lew Myers
Chief Operating Officer - FENOC

Desired Outcome

- Reflect and status the NRC and public on our outage accomplishments to date

Outage Accomplishments

- Restart Test Plan Objectives have been fully met
  - Assured plant/personnel safety
  - Conducted Post-Maintenance/Modification Testing successfully
  - Results are being assessed

Outage Accomplishments

- Demonstrated confidence in plant systems and equipment
  - Completed Testing
    - Integrated Leak Rate Test (April 9)
    - 50 psig Test (May 6)
    - 250 psig Test (May 25)
    - Normal Operating Pressure Test (October 2)

Outage Accomplishments

Plant Inspectors during NOP Test

Outage Accomplishments

- Reactor Vessel and Reactor Coolant System
  - Reactor Pressure Vessel Head Replacement *
    - Access Openings In The Reactor Vessel Head Stand
    - Control Rod Drive Mechanism Nozzle Inspection/Repair
    - Replace Reactor Vessel Head & Service Structure
    - Reactor Vessel Head Transportation/Handling
    - Service Structure Access Openings
    - Original Reactor Head Nozzle Samples
    - Original Reactor Head Shipped Offsite
  - FLÜS Leak Monitoring System *
    - Installed FLÜS Leak Monitoring System
    - Incore Detector Tubes, to support repairs (pending NOP test results)

Outage Accomplishments

- Reactor Coolant System (RCS)
  - Replaced Pressurizer Code Safeties and PORV
  - Reactor Cavity Seal Plate Modification
  - Reactor Coolant System "Deep Drain" Valve Maintenance
  - Replaced Thermal Sleeves for HPI Lines 2-1 and 2-2
  - Fuel Integrity Verification
- Reactor Coolant Pumps (RCP)
  - Reactor Coolant Pump 1-1 and 1-2 Replacement
  - RCP 1-1 Shaft Replacement
  - Replaced N-9000 Seal Cartridges on all RCPs
- RCS Thermowell Replacement
  - Replace RCS Cold Leg Thermowells
  - Replace RCS Hot Leg Thermowells

Outage Accomplishments

- Containment and Containment Systems
  - Reactor Vessel Head Replacement Support
    - Containment Structure Access Opening
    - Restore Temp Access Openings
    - Containment Integrated Leak Rate Test
  - Boric Acid Extent of Condition Inspections Completed
  - Containment Emergency Sump Modification
  - Removed Fibrous Insulation In Containment

Outage Accomplishments

- Containment and Containment Systems (continued)
  - Containment Air Coolers (CAC)
    - Replaced Cooling Coils, Service Water Trees/Bellows, Drop Down Registers
    - Replace CAC Fan Motors MC 2 & 3
  - Annulus Work Activities
    - Apply Water Tight Annulus Membrane
  - Containment Vessel Dome Painting

Outage Accomplishments

- Containment and Containment Systems (continued)
  - Containment Cranes / Bridges
    - Polar Crane Refurbishment
    - In-Mast Sipping Capability Mod
    - Upgrade Of Fuel Handling Transfer System
    - Upgrade Of The Main Fuel Handling Bridge
  - Containment Moisture Seal Installation
    - Containment Vessel Interface Seal

Outage Accomplishments

- Emergency Core Cooling System
  - High Pressure Injection System
  - Decay Heat System
  - Post-LOCA Boric Acid Precipitation Control Modification
  - Decay Heat Pump Cyclone Separators for Containment Debris Issue
  - Decay Heat Valve Tank Modification

Outage Accomplishments

- Electrical Systems
  - Train 1 Station Battery Replacement
  - Electrical Transient Analysis Program Modifications
  - Thermal Overload Heater Modification on 28 Motor Control Center Components Overload

Outage Accomplishments

- Emergency (& Station Blackout) Diesel Generators
  - Emergency Diesel Generator (EDG) 2 Maintenance Outage (EDG 1 Scheduled Post NOP)
    - EDG Motor Operated Potentiometer
    - High Temp-EDG Rooms-Install Manifold Insulation
    - EDG Room Temps-Install Ductwork
    - Replace EDG Air Start Systems

Outage Accomplishments

- Instrument and Controls Systems
  - Safety Features Actuation System
    - Integrated SFAS Testing
    - SFAS Relay Replacement / Restoration
  - Radiation Monitor Upgrade Modifications
    - Replace Control Room Radiation Monitor Recorders
    - Replace Obsolete Victoreen Radiation Monitors

Outage Accomplishments

- Air Operated Valves
  - Implemented program to improve response time
  - Addressed 83 valves
  - Established functional program

Outage Accomplishments

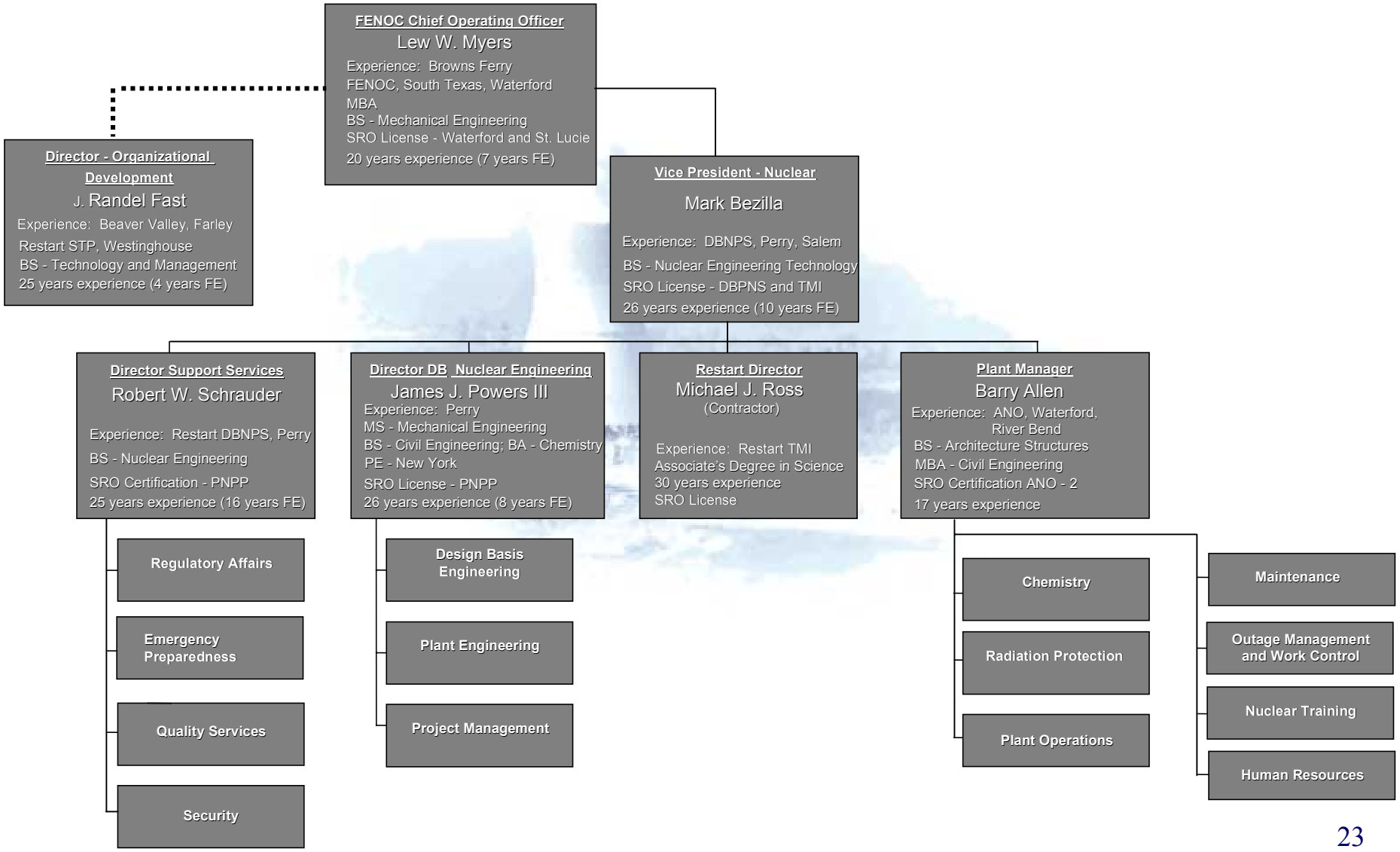
- Plant Systems that will be removed from the a(1) Red Maintenance Rule status
  - Auxiliary Feedwater System
  - Instrument Isolation valves on RCS Reactor Protection System 2-Low Instrumentation
  - Station and Instrument Air
  - Containment Air Monitoring
  - Emergency Diesel Generator
  - Essential & Miscellaneous AC

Outage Accomplishments

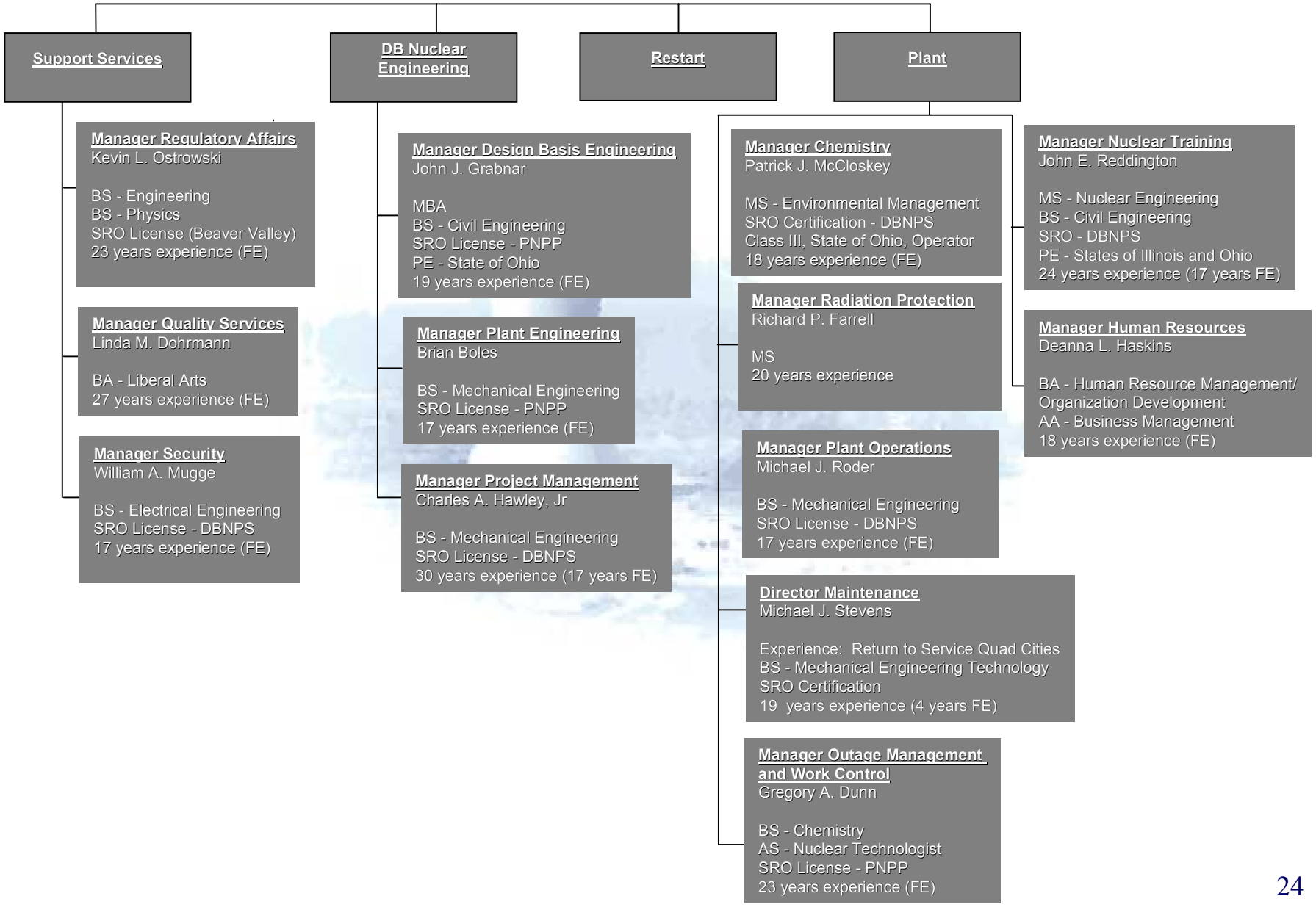
Management and Human Performance

- Root Cause training for employees
- Corrective Action Program Enhancements
- Problem Solving/Decision Making NOP
- Standards and expectations training for employees
- Safety Culture Model and Assessment Process
- Operability Training for SROs and Engineers
- New management team

DAVIS-BESSE SITE ORGANIZATION



DAVIS-BESSE SITE ORGANIZATION



Equipment Challenges

Greg Dunn

Manager - Outage Management and Work Control

Equipment Challenges
Containment Spray Pumps

- Problem Statement
  - –Containment Spray Pumps failed to start on several occasions
  - –Initial Problem-Solving focused upon the over current trip
- Cause
  - –Probable cause was spurious trips from the Solid State Trip (SST) Ground Fault Trip Device
- Corrective Actions
  - –Pump #1 replacement breaker SST without ground fault trip
  - –Pump #2 replacement breaker refurbished SST
  - –Engineering Change under development for elimination of SST ground fault trips (extent of condition)

Equipment Challenges
Thermal Overload Relays

- Problem Statement
  - Thermal Overloads installed as a design change exhibited a trip
  - Some loads remained running following an overload trip
- Causes
  - Sizing of the Thermal Overload relays
  - Relay Race Condition introduced
- Corrective Actions
  - Overloads sized close to the normal operating current were replaced to increase margin
  - 28 Circuits require overload settings increased and 15 circuits require wiring changes (extent of condition)

Equipment Challenges
Auxiliary Feedwater Pump Testing

- Problem Statement
  - Surveillance Test of Auxiliary Feedwater Pump #1 response time exceeded Acceptance Criteria
- Cause
  - Misalignment of governor valve linkage coupled with installation of a new valve
- Corrective Actions
  - Governor linkage was disconnected and adjusted/reconnected in accordance with plant maintenance procedures
  - Response time repeatability demonstrated with confidence tests

Equipment Challenges
Mode 3 Walkdown Summary

Category	Description	Total Items
No Action Required	Findings that are documented but no actions are required (Monitor per Boric Acid Corrosion Program)	31
Ready for reinspection	Components that were adjusted and cleaned and are ready for reinspection	24
Reinspection Satisfactory	Components that were adjusted, cleaned and reinspected satisfactorily	47
Action Required	Components that require repair adjustment, cleaning, etc., that was unable to be preformed during Mode 3	61
Total		163
Total Walkdown/Inspection population (approximately)		1342

NOP Test Challenges
Operations

Mike Roder
Manager - Plant Operations

Desired Outcome

- Demonstrate confidence in addressing NOP Test Operational Issues

NOP Test Challenges
Core Flood Tank Valve

- Problem Statement
  - Inadvertent opening of Core Flood Tank Valve (CF1B)
- Causes
  - Procedure guidance
  - Operator performance
  - Training
- Corrective Actions
  - Relieved crew
  - Corrected procedure
  - Conducted just-in-time training
  - Improved standards for pre-job briefs

NOP Test Challenges
Reactor Protection System Trip

- Problem Statement
  - RPS tripped
- Causes
  - Procedure guidance
  - Operator performance
  - Training
- Corrective Actions
  - Relieved crew
  - Created management guidance for cooldown activities
  - Revised procedure
  - Created reverse pre-job brief document
  - Conducted training for each evolution
  - Added FENOC oversight in Control Room

NOP Test Challenges
Operations

- Operations Action Plan
  - Root Cause and Collective Significance Teams formed
  - Interviewed each Senior Reactor Operator and Reactor Operator
  - Optimize Operating Crews
  - Strengthen integrated Operating procedures
  - Improve Operator Training
  - Assess enhanced crew oversight

NOP Test Challenges
Conclusion

- Conclusions
  - –NOP Test was successful
  - –Operation performance issues identified
  - –Operations Action Plan will address corrections

Operational Readiness Assessment Results

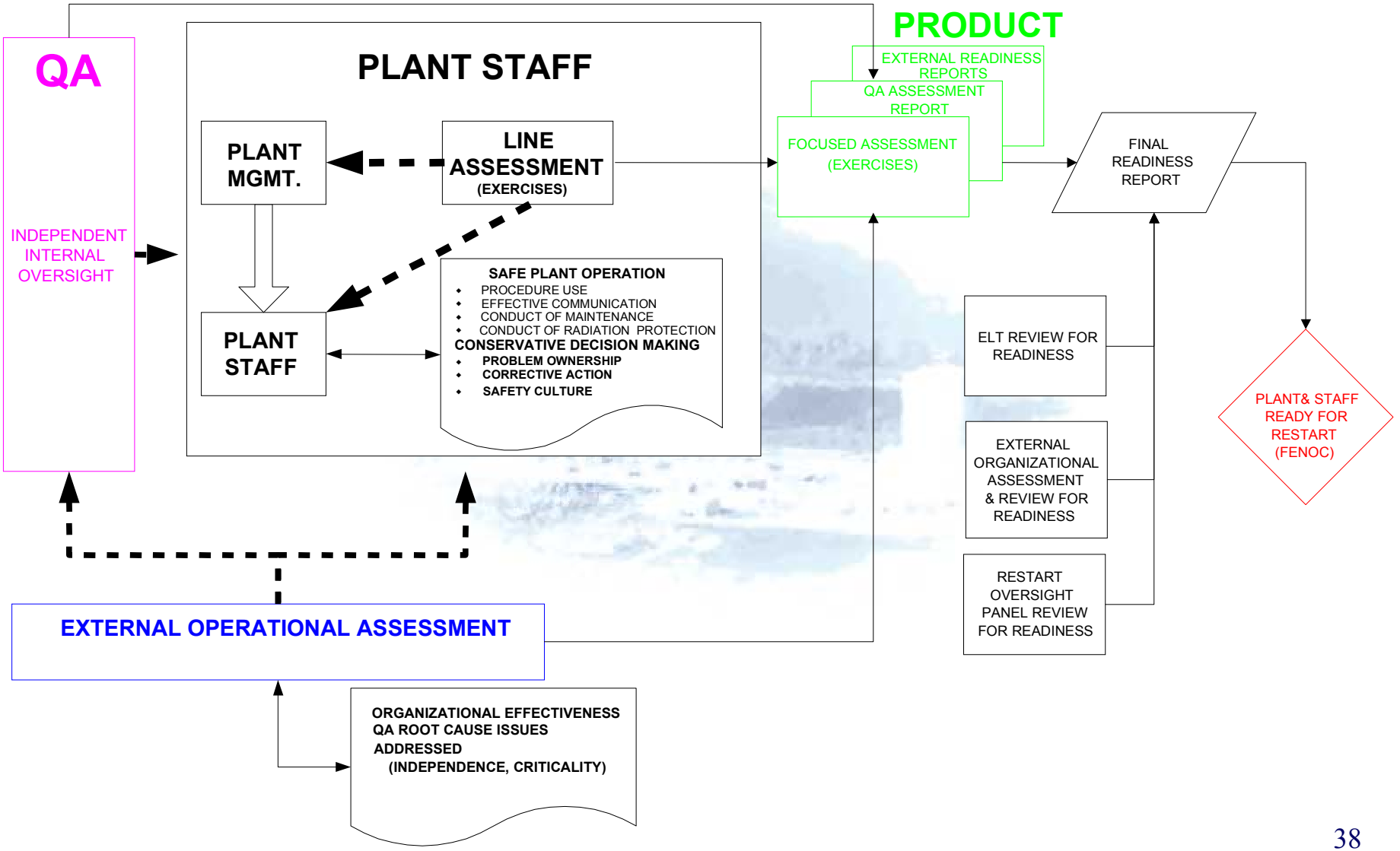
Rick Dame

Reliability Unit - Supervisor

Operational Readiness Assessment Results

- Desired Outcome
  - Share observations and conclusions from "Operational Readiness Assessment"
- Assessment methodology
  - Integrated Assessment Team
  - Applied industry recognized standards of excellence.
  - Conducted per Integrated Restart Test Plan

INTEGRATED ASSESSMENT DURING NOP TEST



Operational Readiness Assessment Results

- Observation Summary
  - In general, observations from peers outside of the Davis-Besse organization tended to be more critical of performance
  - Shift management oversight of operational activities can be improved

Operational Readiness Assessment Results

- Observation Summary
  - Some performance shortfalls were identified in the monitoring of plant parameters and trends, and in turn, anticipating the operational impact of these trends
  - Differences exist in operational pre-job briefs standards between Davis-Besse and industry leaders

Operational Readiness Assessment Results

- Observation Summary
  - The quality of some operational procedures is below that observed at industry leading performers
  - Some weaknesses were observed in the area of procedural compliance

Operational Readiness Assessment Results

- Observation Summary
  - Problem Solving and Decision Making Process was used by station personnel to resolve complex issues
  - Improvements can be made in the implementation of the Problem Solving and Decision Making Process

Operational Readiness Assessment Results

- Observation Summary
  - Benchstrength in certain technical disciplines must be replenished to support sustained organizational performance improvement
  - System Engineering/Operations interface is not as strong as that observed at industry leaders
  - Improvement opportunities exist in the performance of Management observations and coaching

Operational Readiness Assessment Results

- Conclusions
  - Processes and programs support safe and reliable operation when properly implemented
  - Station Management demonstrated effective operational decision making principles when collectively engaged
  - Improvements must be implemented to address Operations performance

Oversight Perspective

Steve Loehlein

Manager – Nuclear Quality Assessment

Assessment Objectives

- Health of Plant Systems and Equipment
- Organizational effectiveness
- Effectiveness of Restart Test Plan

Assessment Results

- Health of Plant Systems and Equipment
  - Equipment performance
  - Plant Walkdown results

Assessment Results

- Organizational Effectiveness
  - Operations Leadership
  - Safety Culture
  - Configuration Control
  - Procedure Compliance

Assessment Results

- Restart Test Plan
  - Provided valuable insights for Management
  - Emphasis on Control Room Activities and organizational response to emergent issues
  - Observations and conclusions similar to those of Quality Oversight

Key Lessons Learned

- Organizational weaknesses appear to have been factors in performance shortfalls
- Prevention of unintended plant responses requires effective barriers prior to Operations' performance of evolutions

Recommendations

- Organizational
  - Complete Collective Significance review of causes of performance shortfalls
    - Identify causes (barriers) that need attention
    - Utilize external assistance to ensure completeness of corrective actions
    - Ensure procedures, training, and performance standards are adequate for future plant evolutions
    - Implement appropriate corrective actions

Recommendations

- Organizational (continued)
  - Train on Configuration Management process
  - Implement effective trend review process
  - Ensure quality and execution of key Operations procedures
  - Improve coordination of Problem-Solving process with Corrective Action Program
  - Emphasize need for inter-department management challenges

Recommendations

- Oversight
  - Supplement Management and Quality Oversight with off-site assistance to improve objectivity and ensure assessments are sufficiently critical
  - Focus Quality Oversight on cross-functional activities and interfaces

Normal Operating Pressure Test
Results/Lessons-Learned

Mark Bezilla

Vice President/Plant Manager

Desired Outcome

- Provide an overview of what we learned from the Normal Operating Pressure Test

Restart Test Program

- Integrated Leak Rate Test - Completed (April 9)
- 50 psig Test - Completed (May 6)
- 250 psig Test - Complete (May 25)
- Normal Operation Pressure Test - Completed (October 2)

Normal Operating Pressure Test
Heat Up

- Started heat up - September 13
- NOP Test was an opportunity to assess our people, plant, and processes
- Challenges during test were handled in a safe manner and posed a minimal safety risk
  - Steam Line Noise - September 13
  - Core Flood Tank Valve Opening - September 15
  - Containment Spray - September 17
- Conclusion
  - Plant issues were investigated and managed

Normal Operating Pressure Test

- Total time of test
  - > 8 days at Normal Operating Pressure
- Inspected 1300 components
- Overall Leak Rate
  - Best in history of plant ~ .006 gpm
- First-ever successful test of FLÜS Leak Monitoring System in the United States
- Proved that our new Reactor Coolant System leak rate program works

Normal Operating Pressure Test

- Completed ~ 700 Post Maintenance/Modification Tests
- Tested most primary/secondary equipment
  - Reactor Coolant Pumps
  - Condensate Pumps
  - Feedwater
  - Makeup
  - Circulating Water
  - Condenser activities
- Demonstrated positive Safety Culture and teamwork
  - Focused on Industrial Safety, Nuclear, and Radiological Safety
  - Organization Effectiveness to resolve issues
  - Problem Solving / Decision Making exercised

Normal Operating Pressure Test
Cooldown

- Reactor Trip
  - One bank of control rods were pulled as conservative action
- Problem Solving / Decision Making Team initiated
- Remainder of cooldown to Mode 5 not only event-less but error free

Normal Operating Pressure Test
Restart Test Plan

- Conclusions
  - Focused on safety
  - Demonstrated Reactor Coolant System integrity
  - Significant Program Improvements
  - Demonstrated state-of-the-art technology (FLÜS Leak Monitoring System)
  - Containment and overall System Health is very good

Remaining Actions for Restart

Mike Ross
Restart Director

Remaining Actions for Restart

- Restart Actions include
  - Completion of 10CFR 50.9, 'Completeness and Accuracy of Information' training
  - Alignment / teamwork sessions
    - One day-long site alignment / teambuilding sessions with employees
    - Learning Map rollout
    - Operational focus
  - Strengthen our Calculation Program

Remaining Actions for Restart

- Restart Actions include
  - Strengthen our Condition Report Process
    - Condition Report Evaluators will receive Apparent Cause training
    - Establish an Apparent Cause Review Group consisting of Condition Report Analysts
  - Corrective Action Trending
  - Plant activities
    - Electrical Transient Analysis Program (ETAP) modifications
    - High Pressure Injection Pumps modification
    - Repair Containment Air Coolers
    - Electrical breaker co-ordination modification
    - Finish AOV Modification work

Remaining Actions for Restart

- Restart Actions include
  - Address Lessons-Learned and actions resulting from NOP Test
  - Restart Readiness Reviews

Overall Conclusions

Lew Myers
Chief Operating Officer - FENOC

Overall NOP Test Conclusions

- Many technical plant changes that improve overall plant safety
- NOP Test demonstrated
  - –Areas of improvement for people to safely operate the plant
  - –Response to emergent issues
  - –Condition of plant equipment
    - –Identified secondary leaks
  - –Integrity of reactor coolant system
    - –Replacement Reactor Vessel Head
    - –Incore monitoring instrument nozzles

Overall NOP Test Conclusions

- Davis-Besse personnel are demonstrating a positive Safety Culture
- Davis-Besse is completing actions necessary to resume safe plant operation